

A1:

Application for Permit for Scientific Purposes under the Endangered Species Act of 1973.

B. Species:

Anadromous threatened or endangered species that could be encountered during sampling include:

- Steelhead (*Oncorhynchus mykiss*), Upper Columbia River ESU, Endangered
- Steelhead (*O. mykiss*), Middle Columbia River ESU, Threatened
- Spring Chinook Salmon (*Oncorhynchus tshawytscha*), Upper Columbia River ESU, Endangered

C. Date of Permit Application: June 14, 2005

D. Applicant Identity:

Colin G. Leingang
Wildlife Program Manager

Yakima Training Center – US Army

Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399

Phone: (509) 577-3860

FAX: (509) 577-3336

Email: colin.g.leingang@us.army.mil

E. Information on Personnel, Cooperators, and Sponsors:

E1. Principal Investigator: Colin G. Leingang – Contact information given above.

Field Supervisors:

- Colin G. Leingang – Contact information given above.
- Brian J. Cochrane
- Brian E. Knapp

Resumes attached at end of document.

E2. Field Personnel:

- Kevin J. Tyler
- Shane G. Early
- Damon G. Roberts
- Annette E. Heinen
- Sandy Jimenez

- Wendy Mee
- Corey Bensen
- Mary Williams

Resumes attached at end of document.

E3. Funding Source: Yakima Training Center, WA

E4. Contractor: Not Applicable.

E5. Disposition of Mortalities and Tissue Samples.

Every attempt will be made to minimize mortalities from sampling. Dr. Paul James of Central Washington University has agreed to accept and catalogue any mortalities that occur. Dr. James's contact information is given below. Scale samples taken from fish will be retained by the Yakima Training Center for aging purposes. Scale samples will not be taken from juvenile Chinook salmon, but will be taken from rainbow trout, which cannot be distinguished from juvenile steelhead.

Dr. Paul James
Central Washington University
400 E. University Way
Ellensburg, WA 98926-7537
(509) 963-1895

E6. Transport and Long-term Holding: Not Applicable.

F. Project Description, Purpose, and Significance:

The significance, purpose, and description of the project we are requesting a permit for can be found in the Yakima Training Center Fish Monitoring Protocol attached to this application.

F1. Justification.

The primary objective is to gather baseline information for use in evaluating land use impacts on fishery resources. These include evaluating impacts of proposed management actions and training activities, preparation of NEPA documents, ESA consultation, preparation of an Endangered Species Management Plan (ESMP) for salmonids, and monitoring fish population trends for management considerations.

Some fish survey data have been collected on YTC in the past. Unfortunately, historic sampling was done using inconsistent methods, effort, and timing, making them inadequate for use as baseline data. All previous monitoring efforts were done prior to the designation of these species under ESA.

The monitoring program being proposed will make more accurate data available for consideration in making management decisions and meeting legal mandates given above.

F2. This monitoring program responds directly to requirements in Army Regulation (AR) 200-3 and the YTC Cultural and Natural Resources Management Plan (CNRMP) 2002. The YTC CNRMP, including its fisheries management section, was reviewed and signed by both Washington Department of Fish and Wildlife (WDFW) and US Fish and Wildlife Service (USFWS). While not a direct signatory of the CNRMP, NOAA Fisheries reviewed the YTC CNRMP as part of a recent status review of 13 salmonid ESU's, eventually deciding that the requirements and protections set forth in the CNRMP were a benefit to these species, and exempting YTC from critical habitat designation (Federal Register, Dec. 14, 2004, Pg. 74582 & 74583).

F3. This project has significance outside of YTC's monitoring program. These data will be considered in a broad spectrum of management decisions in both riparian and upland management on YTC. They will be used by outside agencies in ESA consultations, permit request considerations, input on future CNRMP's, and input on ESMP's.

F4. The Grant County Public Utility District #2 (PUD) conducted fish surveys near the mouths of selected streams located on YTC and the Columbia River in 1999, for use in FERC re-licensing. PUD provided this installation with the survey data collected in this effort. However, PUD used different methodology and only sampled near the confluence of the selected streams and the Columbia River, which was often times not located on YTC. Potential may exist to cooperate with Grant County PUD or other entities in the future, once YTC obtains a collection permit.

F5. YTC is mandated to manage fishes and their habitat on its 500 square miles of land. Effective management of these lands requires accurate data on fish abundance, distribution, and habitat condition. Baseline fisheries data collected by this survey and monitoring program will benefit listed species in many ways, and risk is likely minimal. Quality baseline data will improve YTC's ability to consider listed species in ESA consultations, NEPA actions, and policymaking. Quality data will allow for more informed land management decisions, and consideration of fish resources in a wider variety of situations. In addition, these data will improve the usefulness, effectiveness, and quality of the Salmonid ESMP that will be developed. We feel the potential benefits to these species outweigh the risk imposed on them by the sampling being proposed.

It should be noted that while members of the ESU's mentioned in section B of this application could be encountered during sampling, it is unlikely. Although Chinook fry were found in the lower reach of three streams (Alkali, Hanson, and Corral) in 1988, and again in two streams (Johnson and Hanson) in 1999, they are believed to have been Upper-Columbia Summer/Fall Run Chinook ESU stock. The Ecological Baseline Study of the Yakima Firing Center Proposed Land Acquisition report 1989 states residents at the bottom of Johnson Creek reported that adult salmon had been observed in the creek in the past. Adult steelhead have been seen in the lower reach of Johnson Creek, below the first beaver pond, but never within the YTC boundary, and no evidence of spawning was found. No individuals known to be members of the now listed ESU's have been encountered in historic samples on YTC.

YTC streams are narrow and shallow, making less impactful survey methods, such as snorkeling, impractical. Therefore, YTC proposes to sample fish with minnow

traps, minnow seines, and electrofish techniques, as situations dictate. These situations are described in detail in the methods section of the attached fish monitoring protocol.

Several alternatives to the methods and timing in the protocol, such as hook and line, fish toxins, and snorkeling, have been considered and determined to have more potential for mortality or represent less effective sampling methods for the size and types of streams present on YTC. Timing of sample period could be delayed till later in the summer, when listed species are less likely to be present. Unfortunately, by late summer, streams are choked with vegetation, presenting higher risk to fish buried in cover and providing less effective sampling. Also, avoiding the capture of listed species would misrepresent their use of YTC streams, making it more difficult to consider them in management decisions, ESA consultations, and NEPA actions.

Avoiding sampling within one-half mile of the Columbia River, where listed species are most likely to be found, would reduce potential capture of listed species. This would again misrepresent the use of YTC streams by listed species, and incur all of its associated difficulties. Avoiding these areas would also eliminate the possibility of acquiring data needed in meeting our fisheries management goals.

Variations in yearly conditions can cause a variety of sampling outcomes. Most streams on the YTC are usually not directly connected with perennial flow to the Columbia or Yakima rivers. Streams flow all the way to the rivers on very wet years, allowing fish species to utilize the streams, dry years having the opposite effect. Annual variation in species abundance could cause variation in the number of listed species potentially present on YTC. "Take" estimates will be for the highest expected number in years of the best possible conditions to account for such variation.

G. Project Methodology:

Project methodology is thoroughly discussed in the Methodology section of the Yakima Training Center Fish Monitoring Protocol attached to this application.

G1. Proposed Duration.

Sampling is expected to normally occur in May through November. The fisheries monitoring program on YTC is intended to be a long-term commitment, allowing tracking of YTC fisheries over time. The 2005 season is expected to be a pilot effort used to evaluate the protocol and make improvements. More thorough sampling would then be conducted in the future to provide a detailed base-line data set. We therefore request this permit to be for a five-year period (July 2005 - July 2010).

G2. Procedures and Techniques.

Three methods of capture will be used to sample in the various conditions expected to be encountered in these streams (electrofishing, seining, and minnow traps). These methods are discussed thoroughly in the YTC Fish Monitoring Protocol.

G2A. Electrofishing.

Electrofishing will be the primary technique used in these surveys, as it is more suited to the most common condition (narrow fast flowing stream) and providing the desired data. Electrofishing techniques are more effective on a wider array of species and

sizes of fish than any of the other techniques proposed, and will allow depletion samples for more accurate population or abundance estimates.

Electrofishing teams will be composed of three or more members, at least one of who will have previous experience with electrofishing. Teams will follow all guidelines given in NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act /June 2000, except no drugs will be administered (See methods section of attached protocol for more detail)

G2A. Minnow Seine.

Minnow seines will be used in areas of wide, deep, unobstructed water (beaver ponds for example), where electrofishing will be difficult or dangerous for the crew. In areas of large obstructed waters, such as beaver ponds with some brush in them, Minnow seines may be used in conjunction with electrofish techniques (see methods section of protocol for details).

G2A. Minnow Traps.

Minnow traps will typically be used in areas where electrofishing and seining are not possible or areas extremely difficult to access. They may also be used to sample streams and stretches that are not known to hold fish. Minnow traps will be checked daily and will not be left unattended for more than 32 hours.

G2A. Release.

Fish will be temporarily held in aerated buckets of water, separated by size class. They will be held for no more than 30 minutes. Every effort will be made to minimize handling time. Fish will be returned to the stream they were captured in, outside the block nets, immediately following processing.

G2B. Tags. None proposed at this time.

G2C. Drugs Used. None. For reasons given in the methods of the attached fish monitoring protocol, drugs will not be used.

G2D. Holding and Holding Time.

Fish will be held in aerated buckets of water separated by size class (prey size and larger fish). Every effort will be made to minimize holding time. Fish will be held in aerated five gallon buckets for no more than one half hour. Please see methods section of attached monitoring protocol for more detail.

G2E. Samples.

Every effort will be made to minimize handling time. Fish will be examined for any indications of injury (dark banding, spinal damage, long recovery time, etc.), and appropriate adjustments will be made immediately to capture methods if signs of injury are present. All fish will be measured for fork length on a pre-wetted measuring board and weighed. They will have one or two scales removed from the appropriate location of their body, based on species, for aging purposes (See methods section of protocol for more details). Chinook salmon will not have scales removed, as their age should be

apparent. Scales will be taken from rainbow trout, presenting the possibility of scale collection from juvenile steelhead.

G3. Potential for Injury or Mortality.

Electrofishing could cause injury to fish if settings are too high. The shocker will be set based on guidelines given in NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act 2000, given conductivity, alkalinity, and dissolved oxygen content values measured at the site prior to sampling. We will also consult with Grant County PUD, Central Washington University, and WDFW fish Biologists for input on appropriate settings in these waters. Captured fish will be inspected for any signs of injury (dark banding, long recovery time, etc.) and electrofisher settings adjusted accordingly. Electrofishing will not commence if adult anadromous fish are seen or reds are discovered on a pre sampling walk through, and sampling will stop immediately if adults are discovered in or near the transect during sampling.

Fish could be injured by long residence in minnow traps. Traps will be checked every day, and no more than 32 hours will elapse between checks.

Careless handling could cause injury to fish. Small fish may be measured in plastic bags to avoid removing their slime layer and assist in keeping them under control. Those handling fish will wear wet cotton gloves to avoid removing fish slime layers, and to prevent fish slipping around and causing workers to squeeze too hard. Every attempt will be made to limit handling time and the time fish are out of water.

Fish could be injured in temporary holding tanks. Holding buckets will be aerated, and fish segregated into prey and larger size class holding buckets.

Fish protection measures are discussed more thoroughly in the attached fish monitoring protocol.

H: Description and Estimates of Take.

Listed anadromous species that could be encountered in sampling include:

- Steelhead (Mid-Columbia ESU - Threatened, Upper-Columbia ESU - Endangered).
- Chinook (Upper Columbia River Spring Chinook ESU - Endangered).

H1. Take could occur to:

- Steelhead (*Oncorhynchus mykiss*), Upper Columbia River ESU, Endangered
- Steelhead (*O. mykiss*), Middle Columbia River ESU, Threatened
- Spring Chinook Salmon (*Oncorhynchus tshawytscha*), Upper Columbia River ESU, Endangered

H2. Sampling Schedule and Locations.

Sampling will preferably be conducted in May and June, but could also occur from July through November if funding, availability of resources, or situations dictate. Sampling will occur in streams within the boundaries of the Yakima Training Center. The Yakima Training Center is located between the Yakima and Columbia Rivers, just up stream of the Hanford Reach, and between cities of Yakima and Ellensburg, WA.

Streams are perennial with intermittent sections (referred to as perennial in this document) or completely intermittent tributaries to the Columbia and Yakima Rivers. General locations of streams on YTC are given in the table below.

Columbia River Tributaries

Stream	Status	Lower End		Upper End	
		Latitude	Longitude	Latitude	Longitude
Middle Creek	Perennial	46 53 6.0	-120 0 14.8	46 55 47.1	-120 11 57.0
Johnson Creek	Perennial	46 52 40.8	-120 0 11.0	46 53 26.9	-120 14 4.4
Foster Creek	Perennial	46 53 16.7	-120 9 33.3	46 52 24.3	-120 12 54.5
Hanson Creek	Perennial	46 45 45.5	-119 58 2.9	46 50 24.0	-120 11 26.8
Cottonwood Creek	Perennial	46 46 49.3	-120 2 9.6	46 47 39.6	-120 9 19.7
Alkali Creek	Perennial	46 44 13.6	-119 58 49.7	46 41 48.7	-120 11 48.3
Corral Creek	Intermittent	46 42 39.9	-119 58 28.9	46 40 43.0	-120 6 13.5
Cow Creek	Intermittent	46 41 34.4	-119 57 50.9	46 40 25.9	-120 2 4.6
Sourdough Creek	Intermittent	46 40 43.5	-119 57 22.6	46 39 38.1	-120 3 35.7
No Name Creek	Intermittent	46 44 31.3	-119 58 43.5	46 45 57.5	-120 8 6.9

Yakima River Tributaries

Stream	Status	Lower End		Upper End	
		Latitude	Longitude	Latitude	Longitude
Cold Creek	Perennial	46 35 49.7	-119 55 3.1	46 36 45.4	-120 3 8.6
Badger Creek	Intermittent	46 51 20.3	-120 17 19.7	46 52 29.1	-120 13 20.7
Whipple Creek	Intermittent	46 55 20.0	-120 19 53.4	46 54 19.3	-120 15 55.6
Johnston Creek	Intermittent	46 56 57.7	-120 16 9.6	46 53 34.9	-120 14 40.6
Lmuma Creek	Perennial	46 47 53.5	-120 21 29.3	46 45 32.7	-120 15 36.5
North Fork Lmuma Creek	Intermittent	46 48 39.6	-120 21 6.2	46 50 39.1	-120 14 28.7
Selah Creek	Perennial	46 41 55.0	-120 26 27.9	46 37 2.2	-120 4 41.3
Burbank Creek	Intermittent	46 44 40.5	-120 23 20.6	46 43 53.4	-120 21 21.6

H3. Status and Trends.

The current listing status of the Upper Columbia Spring Chinook Salmon ESU is endangered, and proposed to retain the endangered status (<http://www.nwr.noaa.gov/1salmon/salmesa/pubs/1pgr.pdf>). The Upper Columbia Steelhead ESU is currently listed as endangered, and is proposed to change to threatened. The Middle Columbia Steelhead ESU is proposed to retain its current listing status of threatened.

NOAA Fisheries recently reviewed the YTC CNRMP as part of a status review for 13 ESU's, including those ESU's this take application is for. They determined that the requirements, monitoring, and protections set forth in the YTC CNRMP were a benefit to these ESU's, and proposed a ruling exempting YTC from critical habitat designation for these Species and ESU's (Federal Register, Dec. 14, 2004, Pg. 74582 & 74583).

Both recent 5-year and long-term productivity trends for the Upper Columbia River Spring Chinook ESU remain below replacement (www.nwr.noaa.gov/reference/frn/2004/69FR33102.pdf). The long-term trends for production areas for the Middle Columbia River Steelhead ESU were negative in 2004.

In spite of increased returns of the Upper Columbia River Steelhead ESU, largely due to hatchery supplementation, the mean proportion of natural-origin spawners declined by ten percent from 1996 to 2001 (www.nwr.noaa.gov/reference/frn/2004/69FR33102.pdf). For all listed species that could be encountered during sampling, returns from the last two years have been above the 10-year average, based on dam counts for Priest Rapids and McNary dams at www.fpc.org. It should be noted that these higher returns could just be due to good ocean conditions, are likely below historic runs, and are still of great concern.

H4. Estimated Annual Take.

Number of Individuals	Species and ESU	Life Stage	Sex	Origin	Take Activity Category	Location	Date(s)
≤ 128	Upper Columbia Steelhead	Juvenile	Unk.	Unk.	Capture electrofishing	YTC	May-Sept.
≤ 16	Upper Columbia Steelhead	Juvenile	Unk.	Unk.	Capture in minnow trap	YTC	May-Sept.
≤ 16	Upper Columbia Steelhead	Juvenile	Unk.	Unk.	Capture minnow seining	YTC	May-Sept.
≤ 41	Middle Columbia Steelhead	Juvenile	Unk.	Unk.	Capture electrofishing	YTC	May-Sept.
≤ 6	Middle Columbia Steelhead	Juvenile	Unk.	Unk.	Capture in minnow trap	YTC	May-Sept.
≤ 6	Middle Columbia Steelhead	Juvenile	Unk.	Unk.	Capture minnow seining	YTC	May-Sept.
≤ 40	Upper Columbia Spring Chinook	Juvenile	Unk.	Unk.	Capture electrofishing	YTC	May-Sept.
≤ 5	Upper Columbia Spring Chinook	Juvenile	Unk.	Unk.	Capture in minnow trap	YTC	May-Sept.
≤ 5	Upper Columbia Spring Chinook	Juvenile	Unk.	Unk.	Captur minnow seining	YTC	May-Sept.

Unk. = Unknown

YTC = Yakima Training Center, WA

See H6 for derivation of Numbers

Maximum total numbers that have potential to be handled:

- 160 Upper Columbia juvenile steelhead per year.
- 53 Middle Columbia juvenile steelhead per year.
- 50 Upper Columbia juvenile spring Chinook per year.

We do not expect to capture or encounter any adult steelhead or adult spring Chinook salmon.

H5. Estimates of Potential Annual Mortalities.

Direct (intentional) mortality: None.

Indirect (unintentional) mortality:

Number of Individuals	Species and ESU	Life Stage	Sex	Origin	Take Activity Category	Location	Date(s)
≤ 2.56	Upper Columbia Steelhead	Juvenile	Unk.	Unk.	Capture electrofishing	YTC	May-Sept.
≤ 0.16	Upper Columbia Steelhead	Juvenile	Unk.	Unk.	Capture in minnow trap	YTC	May-Sept.
≤ 0.16	Upper Columbia Steelhead	Juvenile	Unk.	Unk.	Capture minnow seining	YTC	May-Sept.
≤ 0.816	Middle Columbia Steelhead	Juvenile	Unk.	Unk.	Capture electrofishing	YTC	May-Sept.
≤ 0.051	Middle Columbia Steelhead	Juvenile	Unk.	Unk.	Capture in minnow trap	YTC	May-Sept.
≤ 0.051	Middle Columbia Steelhead	Juvenile	Unk.	Unk.	Capture minnow seining	YTC	May-Sept.
≤ 0.8	Upper Columbia Spring Chinook	Juvenile	Unk.	Unk.	Capture electrofishing	YTC	May-Sept.
≤ 0.05	Upper Columbia Spring Chinook	Juvenile	Unk.	Unk.	Capture in minnow trap	YTC	May-Sept.
≤ 0.05	Upper Columbia Spring Chinook	Juvenile	Unk.	Unk.	Captur minnow seining	YTC	May-Sept.

Unk. = Unknown

YTC = Yakima Training Center, WA

See H6 for derivation of numbers.

We expect annual mortalities of no more than:

- 3 Upper Columbia juvenile steelhead.
- 1 Middle Columbia juvenile steelhead.
- 1 Upper Columbia juvenile spring Chinook.

We do not anticipate any mortality for adults of any listed species.

H6. Derivation of Take and Mortality Estimates.

The minimal historic efforts to capture fish on YTC were typically within a half-mile of its boundary or the confluence of tributaries and rivers. Existing data is minimal, but was applied in estimating take.

Fish populations and environmental conditions fluctuate greatly among years in this region. To avoid underestimating take and mortality, all estimates are made with the intention of accounting for possible extreme years. These extreme conditions, such as high water years combined with the high part of the fish population cycle, are discussed in section E5. Consequently, these estimates are probably greater than could occur in most years.

Upper Columbia Spring Chinook

It is unlikely that we will encounter any juvenile or adult Upper Columbia Spring Chinook. Historic surveys have found Upper Columbia Summer/Fall Run Chinook fry in the first half-mile of some YTC streams, but no spring Chinook, as distinguished by size at that time of year.

To avoid underestimating the potential to take Upper Columbia Spring Chinook smolts, we have estimated that in extreme years we could encounter up to 5 smolts in each of the ten streams entering the Columbia River from YTC, giving a possible take of 50 juvenile spring Chinook. This estimate was then multiplied by the percentage of capture effort estimated for each capture method (10% minnow trap, 10% seine, 80% electrofish), giving the take estimate for each method. We set a liberal mortality estimate for each capture method to account for immediate and possible later mortality, due to delayed effects of capture. Electrofishing mortality was set at 2%. Mortality estimates for the minnow trap and seine capture techniques were set at 1%, as they should have less of an impact on captured fish than electrofishing. These percent mortality estimates were multiplied with their respective take estimates for each method to get a mortality estimate for each method per year.

Steelhead

Due to the limited historic fisheries data available for YTC, we were forced to use the minimal existing data to estimate how many rainbow trout and steelhead could be captured. Adult Upper Columbia River Steelhead have been observed in the lower reach of Johnson Creek (Getty's Cove), located off of YTC. Consequently, visual surveys were conducted in the lower portion of Johnson creek from late February through May 1988 and verified the presence of adults in this reach during the months of April and May.

Although small patches of rock and fine gravel that could serve as suitable spawning substrate were observed during the surveys, most of the available streambed was silted in, and no evidence of spawning was observed.

It is not possible to visually distinguish juvenile steelhead from rainbow trout, so a method was developed to estimate the number of steelhead that may potentially be encountered. The greatest number of rainbow trout captured in a 100 yard sample reach of any given stream previously sampled on YTC was multiplied by the possible number of transects to be sampled in this effort to get an estimate of the total number of rainbow trout that could be captured in that stream. If only 30m transect capture data was available for a given stream, the largest number of rainbows captured was multiplied by three, giving an approximate number for 100 yard transects. If a stream has never been sampled, or no fish were found, the number of fish per transect was set to five, to account for the unknown, and high water and abundance years discussed in section E5. The number of rainbow trout that could be caught in each stream was summed for each river drainage and multiplied by 10%, giving the possible number of steelhead that could be caught. The liberal percentage estimate of steelhead was set at 10% because no data is available to infer the percentage of rainbow trout that would actually be steelhead.

Using NOAA Fisheries range descriptions provided for the middle and upper Columbia steelhead ESU's (www.nwr.noaa.gov/1salmon/salmesa/stlhmc.htm, and www.nwr.noaa.gov/1salmon/salmesa/stlhuc.htm), steelhead in Yakima River tributaries were assumed to be of the Middle Columbia Steelhead ESU. Likewise, steelhead in Columbia River tributaries were assumed to be of the Upper Columbia Steelhead ESU. Take and mortality estimates for each capture method were calculated using the total take estimates for each steelhead ESU and the same methods for calculating them for Chinook salmon above.

I. Transportation and Holding. Not Applicable

I1. Transportation of Listed Species. Not Applicable

I2. Holding of a Listed Species. Not Applicable

I3. Emergency Contingencies. Not Applicable

J: Cooperative Breeding Program: Not Applicable

K: Previous or Concurrent Permits for Listed Species: Colin Leingang has not been the permit holder or primary investigator on a previous NMFS permit for salmonid species. He has however been a sub-permittee on several Washington State and USFWS permits for other species (scientific collection permit for fish, reptiles, amphibians, mollusks, small mammals, spotted owls, and bald eagles).

L: Certification:

I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand this information is submitted for the purpose of obtaining a permit under the Endangered Species Act of 1973 (ESA) and regulations promulgated thereunder, and that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or to penalties under the ESA.

Colin Leingang
Wildlife Program Manager
Yakima Training Center, WA

Date

Attachment: Personnel Information

Principal Investigator: Colin Leingang
Wildlife Program Manager
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399

Phone: (509) 577-3860
FAX: (509) 577-3336
Email: colin.g.leingang@us.army.mil

Colin has over 15 years experience as a biologist working at least part time on fisheries related projects. He has seven seasons of experience fish sampling, using electrofishers, seines, and traps. He spent one full season capturing, transporting, and releasing salmonids on a daily basis. He has been a state permit holder or sub-permittee on numerous fish capture projects over a 10-year period. Has numerous seasons of experience sampling and assessing fish habitat.

Field Supervisor: Brian Cochrane
Natural Resources Management Specialist
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 577-3612

Brian is a Natural Resource Specialist with over 10 years experience working on fisheries related projects, sampling fish and their habitat, using electrofishers and other capture techniques, handling fish, taking scale samples, and collecting biometric data.

Field Supervisor: Brian Knapp
Biological Science Technician
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 577-3549

Brian is a wildlife biologist with no fisheries experience. He has taken very limited fisheries coursework, including fish ecology and a two-day course on electrofishing “Applied Electrofishing Principles and Practices”. He has over 15 years experience conducting wildlife and habitat surveys, and over seven seasons capturing, handling, and collecting biometric data from numerous wildlife species under various state and federal permits.

Field Personnel: Corey Bonsen
Land Management Technician
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 577-3165

Corey has very limited fisheries related coursework, six months experience doing fish and stream surveys, and three years experience assessing riparian areas. He has collected biometric data, clipped fins, and collected scale samples from captured fish.

Field Personnel: Annette Heinen
Multi-resource Crew Technician
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 225-8814

Annette is a biological science technician with five seasons experience conducting fish and stream surveys, using electrofish and other capture techniques. She worked as a fish culturist for WDFW Yakima Fish Hatchery. She has two seasons of experience capturing, handling, transporting, and releasing small mammals, and ten seasons experience conducting wildlife and related surveys.

Field Personnel: Shane Early
Multi-resource Crew Leader
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 225-8813

Shane is a biologist with two season of experience capturing, handling, transporting, and releasing small mammals, and seven seasons experience conducting wildlife and related surveys.

Field Personnel: Kevin Tyler
Natural Resources Management Specialist
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 577-3544

Kevin is a natural resources manager with four seasons of experience conducting wildlife monitoring and surveys. He also has four years experience inventorying and assessing riparian areas, streams, and wetlands.

Field Personnel: Damon Roberts
Natural Resource Management Specialist
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 577-3789

Damon is a natural resource manager and hydrologist with one season of experience conducting wildlife surveys. He also has one season of experience inventorying and assessing riparian areas, streams, and wetlands.

Field Personnel: Sandra Jimenez
Multi-resource Crew Technician
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 225-8814

Sandra has two seasons experience with wildlife habitat monitoring. She has one year of experience as a graduate research and teaching assistant, teaching and assisting in rangeland surveys. She is currently beginning a job involving small mammal trapping, and the inventory of wildlife and their habitat.

Field Personnel: Wendy Mee
Multi-resource Crew Technician
Yakima Training Center – US Army
Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 225-8814

Wendy is a landscape architect, with over ten years of experience in propagation and use of native plants in rehabilitation and maintenance of sustainable landscapes. She is currently beginning a job involving small mammal trapping, and the inventory of wildlife and their habitat.

Field Personnel: Mary Williams
Archeological Technician
Yakima Training Center – US Army

Directorate of Public Works
Yakima Training Center
Yakima, WA 98901-9399
(509) 225-8811

Mary has extensive experience in rangeland ecology, landscape rehabilitation, and grazing management. She has one year of experience in wildlife and habitat monitoring.